

Contents:

Importance of an Academic Program in Herbal Sciences	1
Complementary and Alternative Medicine: What is its role?	2
Contributor's Corner--Herbal Medicine, Quite Popular	3
Ginseng Production: Cleaning, Drying and Selling	4
Plant Profile-Foxglove	4
Chemical and biological characterization and clinical evaluation of botanical dietary supplements	5
Botanical dietary supplement use in peri- and postmenstrual women	5
Subscriptions Contributions Advertisements	6

The Herbal Dispatch

A monthly publication of the Medicinal Botanical Program

Mountain State University
P.O. Box 9003
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The goal of this newsletter is to inform readers of the Program's educational, research and outreach activities and events; and of results of the latest research on the chemistry, cultivation, processing and preventive and therapeutic use of herbs, botanicals and vegetables

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Importance of the Academic Program in Herbal Sciences

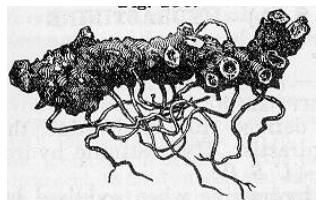


West Virginia is a mountainous state with large areas of land covered mainly with natural hardwood forest. The forest canopy prevents 40 to 80% of the sunlight from reaching the forest floor creating an environment where a diversity of well-adapted perennial herbs and shrubs grow in soils that regularly are humid, well-drained, humus-rich, and acidic. For centuries, the Native Americans inhabiting this land studied the forest plants and by trial and error learned about their medicinal properties.



This accumulated empirical knowledge was

then absorbed by the European colonists, who in turn passed it on to their descendents, generation after generation, until the present day, that still persists among Appalachian people.



This knowledge was popular in the 19th century and the eclectic doctors took it and expanded it for the daily treatment of their patients. The eclectic medicine fell out of fashion in the 1930's, when the sulfa drugs were discovered and the use of antibiotics started, developing the concept of single-action drugs for the treatment of illnesses and complaints.

During the 1990's the complementary and alternative medicine industry, including herbal medicine, gained popularity again and grew significantly. People disappointed with

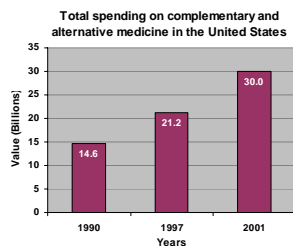
synthetic drugs and prescribed medicine increasingly started looking for alternative ways to treat their ailments. Traditional herbal medicine and curative systems such as the Chinese, ayurvedic, eclectic, and shamanic, and terms such as naturopathic and holistic became popular again.



Now millions of Americans and Europeans use one or more of the many alternative medicine systems available. This sudden worldwide demand for medicinal botanicals caught the supply side of the market unprepared, creating a rush to deliver botanical products, many times of doubtful origin and quality. Currently the demand for vegetative medical products of good quality is

Importance of the Academic Program in Herbal Sciences (Cont'd)

large and strong and the complementary and alternative medicine industry has a market of approximately 30 billion dollars, a 100% increase since 1990 when the value of the market was estimated at 14.6 billion.



Several medicinal plants with large demand in world markets are native to West Virginia. These plants traditionally have been wild cultivated, but with the large rise in demand, natural populations are under intense harvest pressure, with risk of extinction for the species. A solution to this problem is cultivation, and growers are beginning to understand the importance and advantage of cultivating medicinal plants, especially the ones

demand in large quantities. The paradox is that these plants are mostly being cultivated and processed in Europe and in states other than West Virginia, and a good opportunity to locally cultivate and process these native plants is being lost. West Virginia has the land and the appropriate environment but lacks strength in the production and marketing structure for the development of a profitable herb industry. Politicians, community leaders and educational institutions need to work cooperatively for the formation of a strong structure, especially with respect to legislature, grower organizations, and training of professionals in the fields of production, processing, marketing and utilization of medicinal herbs.

The Herbal Sciences program at Mountain State

University is being created with the objective of forming professionals who will take the lead in the development of a strong and lucrative herb industry in West Virginia.



This academic program will train motivated individuals on how to produce, process, market, sell, and utilize medicinal plants. It will capacitate professionals with the knowledge to carry out production and commercialization analyses, initiate and establish small business, and develop strategies conducive to the creation of market opportunities for medicinal plants. It is intended for individuals

interested in making a career in the medicinal plant industry either as an independent grower, producer, processor,



marketer, seller, or practitioner, or as an employee at many of the herb companies across the country that not only produce, process, market and sell herbs and herb products but also study, analyze, evaluate and standardize them; or as an educator and researcher at several institutes, colleges and universities with academic programs in alternative medicines now proliferating in the country.



Complementary and Alternative Medicine: What Is Its Role?

Eisenberg L. 2002. Harvard Review of Psychiatry 10(4): 221-230

Complementary and alternative medicine (CAM) remedies vary greatly in safety and effectiveness.

Then why is their use increasing at a time when evidence for the effectiveness of "orthodox" treatments is greater than ever before? Dazzled by technology, physicians dismiss "nonspecific" treatment effects as mere "placebo" and ignore the effects of caring. Over half

of patients with anxiety or depression consult CAM practitioners in any given year. The popularity of CAM attests to its responsiveness to patients' search for more than procedurally oriented care. It reflects biomedicine's failure to give patients the time they need to tell their story and to

explain the nature of problems they face, and its failure to provide sufficient information to allow patients their choice among therapeutic alternatives. Effective CAM practices should be incorporated into care, whether treatments are provided by biomedical or CAM practitioners.

Contributor's Corner

Herbal Medicine, Quite Popular

Is it surprising to learn that about one out of five people in the U.S. use some form of natural products as therapy? That was one of the findings in a survey of 31,000 people conducted by the National Center for Complementary and Alternative Medicine (NCCAM). The Prevention 2002 National Health Interview Survey conducted on behalf of the U.S. Centers for Disease Control found that 19% of those surveyed used natural products therapy, such as herbs and botanicals. This percentage should not be a surprise when we recognize that at times

people become disillusioned with conventional medicine and its significant reliance on the use of synthetic drugs. Many people are exploring alternative ways to prevent and treat their ailments in ways that are natural but complimentary with modern medicine.

The use of herbs in particular is becoming more and more common. With one out of five people using alternative approaches, it is not surprising to find a significant number of Mountain State University employees using them on a regular basis. One such person at Mountain State who has taken it very seriously for many years is our own Elma M. Reed.

Although many of us around campus may be more familiar with her legal research for the General Counsel's Office and other University programs, it turns out that she is a passionate student of natural medicine and a firm believer in the curative properties of plants.

Even before getting her law degree from West Virginia University, she had begun to explore the use of medicinal plants as an alternative to or as a supplement to her personal health regimen. Although she had worked in the health care field before becoming a lawyer, it was not until afterwards that she decided to get academic training to learn more about

the botanical and therapeutic properties of medicinal plants and how to prepare and use herbal remedies. Even though she has temporarily put her formal studies as a student in the Doctor of Nutrition program at Clayton College of Natural Health on hold, she continues to look for natural remedies whenever the need arises. Because so many of her friends have found it helpful, she was willing to share her cough syrup recipe with us. Not only has she found it to be effective, she says it tastes good as well. If you want an alternative to the "modern" cough syrups, you might want to try this recipe (a tablespoon, as needed):

Elma's Cough Syrup

1 T Calendula
1 T Lemon Verbena
1 T Mullein
1 T Peppermint
1 T Yarrow
1 Pint Filtered Water
1 C Honey

Mix herbs with water in a saucepan. Bring to a boil. Continue to boil until liquid is reduced by half. Strain out herbs using food-grade cheesecloth (make sure you twist the cheesecloth with the herbs inside to ensure that you get all of the liquid out of them). Add honey to remaining liquid. Simmer on low heat for about 30 min. Store in a glass jar in the refrigerator.

Calendula has antibiotic properties and is a diaphoretic (produces or increases perspiration).



Lemon Verbena has a slight sedative effect and is also a diaphoretic.



Mullein is an expectorant, a demulcent (soothing medicine) and an emollient (medicine with softening effect). It also has pain relieving properties and can inhibit certain types of bacteria.



Peppermint removes hardened mucus from the bronchial system.



Yarrow eases feverish aches and pains.



Ginseng Production: Cleaning, Drying and Selling

By David C. Carman

After digging a marketable quantity of ginseng roots, they must be properly prepared in order to obtain the best sale price.

Licensed buyers are plentiful but competition among them for your roots is highly limited with respect to "price per pound". This aspect of the business is rigidly controlled by the export market which fluctuates according to demand and supply of previous year's roots held in storage. Therefore, the digger must shop around among buyers for the best price.

Preparation of roots for the market consists of washing and drying. This is not a quick, simple, or easy endeavor. You have very carefully dug your roots, avoiding damage. Careful handling during the washing and drying process is also a must in order to obtain the best possible return for your efforts.

Ginseng roots are, in most

cases, used for human consumption. They must be cleaned and dried under sanitary conditions. Roots should be carefully washed one at a time with clean, potable water. In other words, don't wash your roots with water you would not drink.

My method of washing utilizes well water under medium to low pressure from a hose nozzle. It is necessary to remove all dirt and debris. High pressure will abrade and damage the very delicate outer film skin. High pressure will also change the natural color of the root which is undesirable. As the washing progresses, I accumulate the clean roots on a screen in an airy, shade place where they are allowed to drip, drain, and air dry on their surface. Let me say at this point that ginseng roots and all other herbal roots should never be exposed to direct sun light for any length of time.

Once small batches are surface dried in this manner,

they should be placed in your drying system. All diggers have their own drying process. Any process must accomplish the following. Completion of the process must produce very dry roots. That is, dry enough to break with a clean snap like a glass rod, no bending allowed. Your process must reduce natural moisture content continuously and at a constant rate. The constant rate must be timed to avoid rapid drying of the surface thereby trapping internal moisture, causing unseen mold and/or discoloration. Ideally, ginseng roots should dry evenly throughout the root at a rather slow rate. Large roots generally require as much as six weeks to properly dry for market.

My drying process consists of spreading roots on a window screen not allowing them to touch each other. Position the roots so that the fine feeder roots are splayed out straight. Position the screens with spacers under them to allow for complete air flow around the roots, in an

air conditioned room where they will not receive direct sun light or dust floating in the air. Drying in an air conditioned area provides necessary dehumidification, thereby carrying ambient moisture out of the room. Remember, they may be in the drying process for as much as six weeks and they should be inspected daily and turned every few days.

When roots are dry, handle carefully to avoid breaking small feeder roots. Carefully place them in cardboard boxes between layers of cotton batting for protection until sold.

A final note, West Virginia dug ginseng can be legally sold in West Virginia directly to a buyer, however, because American ginseng, *Panax quinquefolius* L., is export-monitored and controlled by the federal government in accordance with the terms of the CITES treaty, West Virginia ginseng must be certified by the West Virginia Department of Forestry, if it is to be transported outside the borders of West Virginia.

Appalachian Plant Profile: Foxglove

Submitted by: Dean Myles
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MSU

Digitalis purpurea is a biennial commonly known as foxglove. Foxglove is an escaped garden alien from Europe and a member of the figwort family. The plant can grow between 3 and 6 feet in height. The leaves are a basal rosette of hairy, lance-shaped, toothed leaves up to 12 inches long. Foxglove produces spotted purple flowers on long spikes during the second year of growth.

The leaves of foxglove are a source of heart- tonic glycosides. They are used in today's medicine for increasing systolic contractions in congestive heart failure. It is also used to lower venous pressure in hypertensive heart problems and to elevate blood pressure in weak hearts. Foxglove is a very dangerous plant and should be used only by physicians and trained herbalist. The first year plant is similar to comfrey and should be correctly identified before harvest.

Foxglove can be cultivated from seed and root divisions. Seeds have a 20-30 day

germination rate at a soil temperature of 60-65°F. Seeds should be sown on the soils surface in early summer. These plants should be ready to flower the following summer. Divisions can be made in early fall or spring. Plants should be place 18 inches apart to prevent over crowding. Foxglove prefers nitrogen rich sandy loam soil that is slightly acidic, 6.5-7.0 pH. Foxglove can be planted in areas with full sun to light shade and will easily naturalize. Remember to use extreme caution with foxglove. It is highly toxic and should never be ingested for any reason.

Please contact your state's Department of Forestry for laws and regulations concerning foxglove harvest in your area.



Herbal Medicine Research

Chemical and biological characterization and clinical evaluation of botanical dietary supplements

Piersen CE, Booth NL, Sun Y, Liang W, Burdette JE, van Breemen RB, Geller SE, Gu C, Banuvar S, Shulman LP, Bolton JL, Farnsworth NR. 2004.

Curr Med Chem. 11(11):1361-74.

Botanical dietary supplements, as compared with nutritional supplements or single-component pharmaceutical drugs, are typically less-refined preparations derived from

bulk plant material and, as such, require a modified approach to their development, production, and evaluation. An integrated, multidisciplinary team of scientific and clinical investigators is required in order to develop high quality phytomedicines and rigorously evaluate their safety and efficacy. Research on botanicals involves unique challenges as plant source materials frequently vary in chemical content and may contain unwanted pesticides, heavy metals, contaminant plant species, or other adulterants.

Ideally, a botanical formulation should be standardized, both chemically and biologically, by a combination of analytical techniques and bioassays. This combination approach provides multiple measures by which reproducible quality and efficacy of botanical supplements may be achieved, and is particularly useful for botanical products for which the active compound(s) have not yet been identified. Safety and toxicity should be evaluated during the supplement development

process in both in vitro and in vivo systems. A number of liquid chromatography-mass spectrometry methods can aid in the assessment of purity, bioavailability, toxicity, metabolism, and molecular target profiling of botanical extracts. Clinical investigators must appreciate the complexity of multi-component phytomedicines and adjust trial protocols accordingly. This review highlights practical considerations of value to basic science and clinical investigators engaged in the study of botanical supplements.

Botanical dietary supplement use in peri- and postmenopausal women.

Mahady, G. B.; Parrot, J.; Lee, C.; Yun, G. S.; Dan, A. 2003. *Menopause* 10(1):65-72

Objective: To determine use of botanical dietary supplements (BDS) in women between the ages of 40 and 60 years at the University of Illinois at Chicago (UIC) clinics, including information about commonly used BDS, the reason for use, information resources used, and the overall perception of safety and efficacy of BDS.

Design: Five hundred

female outpatients at UIC clinics were interviewed by healthcare practitioners using a botanical/drug history questionnaire. Respondents were 46.8% African American, 39.6% Caucasian, 11.7% Hispanic, and 1.5% Asian, with a mean age of 50.34 years.

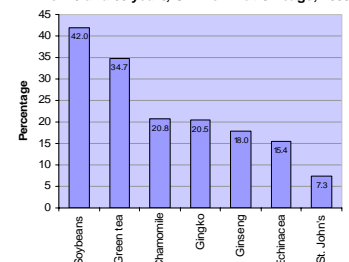
Results: BDS were used by 79% of respondents (n = 395), of which 36.5% used BDS daily. Of the positive respondents, 51.7% used one or two BDS, whereas 48.4% used three or more. Commonly used botanicals included soybeans (42%), green tea (34.68%), chamomile (20.76%), ginkgo (20.51%), ginseng (17.97%),

Echinacea (15.44%), and St. John's wort (7.34%). Black cohosh, garlic, red clover, kava, valerian, evening primrose, and ephedra were used by less than 15% of respondents. Efficacy ratings were high for BDS, and 68% claimed to have no side effects. Only 3% of respondents obtained BDS information from healthcare professionals, and 70% of respondents were not informing their physician of BDS use.

Conclusions: A high percentage of women at UIC clinics were using multiple BDS. The respondents believed that these products were both safe and effective for the

treatment of common ailments. Concomitant BDS use with prescription and over-the-counter medications was commonplace, often without a physician's knowledge. Consumer education about the possible benefits and risks associated with BDS use is urgently needed.

Botanicals used by women between the ages of 40 and 60 years, Univ. of IL at Chicago, 2003



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About the Medicinal Botanical Program

This Program was created as a result of a Specific Cooperative Agreement between Mountain State University and the USDA/ARS-Appalachian Farming Systems Research Center in Beaver, WV. The establishment of this agreement came through the efforts of Senator Robert C. Byrd and a Congressional Appropriation. The mission of the Program is to promote the medicinal plant industry through research, education, marketing and outreach.

Educational offerings include a Bachelor degree in Herbal Sciences, a symposium and workshops. The Program also conducts research on the chemistry, propagation and cultivation of native medicinal plants.

Subscriptions

Would you like to receive this newsletter? Subscriptions are free and subscribing is easy. Just send us your name, address and e-mail (if available). We provide electronic and printed versions of the newsletter, indicate which one you would prefer by sending a message to:

mmorales@mountainstate.edu

or

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Contributions

Dear growers, processors, marketers, and practitioners, would you like to share your knowledge and personal experience on how to produce, process, market and use herbs and aromatic and medicinal

plants with our readers? It is simple. You just have to put your ideas on paper (typed or handwritten) and mail them to us. We will publish your article as space becomes available in subsequent issues of the Herbal Dispatch.

Optional: you may want also to send a short biographical sketch, so our readers can know you better.

Please send contributions to the e-mail or the postal mailing address provided above.

Workshop Series

The Medicinal Botanicals Program at Mountain State University would like to start offering workshops on the propagation, cultivation, processing, utilization and marketing of aromatic and medicinal plants in the spring of 2005.

The workshops will be offered only by request to groups from institutions

and organizations such as schools, colleges, gardening clubs, churches, women associations, senior citizen groups, and any other organization interested in learning about aromatic and medicinal plants.

Workshops will be organized according to the interests and level of

knowledge of the group; they will require a minimum of 10 participants

If you belong to an institution or association which would be interested in attending a workshop, please contact our Program at 929-1630 to organize contents and schedule dates and times.

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